A WORK LOAD STANDARD FOR LAS VEGAS FIRE & RESCUE TRANSPORT UNITS AT FIRE STATION ONE.

Executive Leadership

By: Henry L. Clinton
Las Vegas Fire & Rescue
Las Vegas, Nevada.

An applied research project submitted to the national Fire Academy
As part of the Executive Fire Officer Program

November 2001

ABSTRACT

The problem identified for this applied research project was, Las Vegas Fire & Rescue had not determined a workload standard for crewmembers assigned to rescue duty at Station One.

It was the purpose of this project to identify all activities “rescue personnel” participate in (emergency and non-emergency), and identify the associated time frames attached to those activities, and finally develop a reasonable workload for Station One rescue personnel.

The action research method was chosen for this project.

The research questions to be answered were:

1. What are the non-emergency activities of personnel assigned to rescue duty, and what are the associated time frames?
2. What constitutes the daily emergency activities, and associated time frames?
3. What is a realistic workload for crewmembers assigned to transport units at Station One?

The procedures used to collect data included a literature search from the National Fire Academy, local public libraries, the department’s library, and the author’s personal library. Original research was performed through personnel interviews, and by riding along on emergency calls, recording run report times, and by requesting personnel to document run report entry times.

The results of this applied research project indicated that rescue personnel assigned to station one are overworked, spending up to 62 percent of their time on emergency related activities, which is more than twice what the IAFF recommends as an acceptable workload.

The results of the project were as follows, after combining the administrative daily assignments (seven hours), daily training requirements (three hours), and fatigue management (seven hours) there are seven hours remaining for emergency related activity. It is recommended that the

emergency call volume for station one rescue units and crew be limited to thirteen (13) calls a shift, which includes two patient transports a day. They would meet the IAFF approved emergency workload recommendation.

TABLE OF CONTENTS

INTRODUCTION

The problem is Las Vegas Fire & Rescue has not established a workload standard for firefighter crewmembers working on transport units during their 24-hour shift. Las Vegas Fire & Rescue has not determined what the average emergency call volume is for a rescue unit stationed at Station One (the downtown station).

It is understood that firefighters are “on duty” and available for emergency responses, at any given time on any given day. However, the question is how many calls should a rescue unit respond to during any given 24-hour shift?

It is important to understand that there are 24 hours in a day; Las Vegas Fire & Rescue will respond to any call for service during any 24-hour period. However, this does not mean emergency crews have all 24 of those hours available to them for emergency responses. Firefighters have other non-emergency activities that must be performed during their 24-hour shift; these other related activities take up part of their time.

Emergency Medical Services (EMS) takes up a large portion of our call volume in Las Vegas, close to 75 percent (SunPro, 2000). On average there are 135 emergency medical calls received in the city daily. Sixty five percent of those calls occur in the downtown section, which incorporates Fire Station One’s running district. Recently, Rescue One responded to 31 calls in a 24-hour shift (SunPro, 2000). A call volume of that magnitude requires a crew to spend 62 percent of their time engaged in emergency related activities; this is over twice the IAFF recommended work load (International Association of Fire Fighters, 1995). To continue in this manner is among things contributing to “paramedic burnout” (Randleman, 1980). Additionally, fire officers and crews used to be able to spend time preparing for a fire of some other related

emergency. They had time to perform pre-plans, in-district inspections, single and multi-company drills. Now the time to plan and prepare for emergencies is hard to find. There are other responsibilities, required training from Human Resources and mandatory EMS training from the Health District that have crept into our daily schedule. This makes it difficult for company officers to not only train their crew but complete other suppression activities such as in-district inspections, pre-planning, or school drills. Not to mention remedial training issues.

The latest evolution in Las Vegas Fire & Rescue's agenda is, becoming a "full service Emergency Medical Service Provider". This means, we not only provide the public with paramedic level first responder emergency medical service, but we are adding patient transportation to our daily duties (Blue Ribbon panel, 2000).

Being a "full service" EMS provider adds a significant workload to a rescue person's already busy schedule. In order to manage the fire service efficiently we need to identify the productivity capabilities of our emergency response crews. Recognize what their capabilities are, and staff the stations in a manner that allows crews to accomplish their daily workloads. This includes emergency and non-emergency activities.

The purpose of this study is to identify the daily responsibilities and activities required of emergency responders during a normal tour of duty. To identify the time frames attached to those responsibilities, and finally determine what the emergency response capabilities of a transport unit at station one are. This will allow upper level managers to effectively plan staffing levels. This is critical to the future of our department as we take on additional responsibilities. As our call volumes increases, we will need to accurately determine realistic workloads for our firefighters and be proactive in determining our fleet size and personnel needs.

The research method chosen for this project is the action method. The research questions to be answered are:

1. What are the non-emergency activities of personnel assigned to rescue duty, and what are the associated time frames?
2. What constitutes daily emergency activities, and associated time frames?
3. What is a realistic workload for crewmembers assigned to a transport unit at station one?

BACKGROUND AND SIGNIFICANCE

The City of Las Vegas is approximately 110 square miles and hosts 450,000 residents. Las Vegas Fire & Rescue has historically placed fire stations strategically throughout the city for two reasons. First, rapid-fire responses allows suppression crews to arrive and attack a fire prior to flashover. This allows fire victims and firefighters a margin of safety, by catching the fire in the early stages and allowing fire victims an increased chance of survival, by limiting their exposure to smoke and other deadly products of combustion, and by preventing further damage by reducing fire spread through early extinguishment (Coleman, 1999).

Second, as our department began to increase its role in EMS delivery, it became apparent that we needed to meet the American Heart Association's (AHA) suggested response times in order to increase cardiac patient survivability. The AHA recommended first responder arrival times for cardiac patients and the time frame for an incipient fire flashing over are nearly the same (International Association of Fire Fighters, 1995).

Both scenarios support an argument for strategically placing fire stations throughout the city, providing the citizens we protect with life saving rapid response times. However, having stations strategically placed throughout the city and allowing a rapid response does not take into consideration the amount of calls that may be received in any given area.

Fire Station One has historically been the busiest station in the city. Medics assigned to Station One often complain about being abused and overworked. Whenever medics attain enough seniority to transfer to a slower station, citing the heavy call volume, which they claim is "burning them out".

Recently Rescue One responded to 31 EMS calls in a 24-hour shift (SunPro, 2000). It is physically impossible for a crew to respond on that many calls and accomplish all their assigned responsibilities. While they do often respond 31 times in a 24-hour shift, the EMS division feels that other critical responsibilities are being overlooked. Such as unit inventory, daily check out, drug log inventory, physical training, suppression classes and training sessions, patient run reports, meals etc. Besides determining a reasonable workload, the most pressing question is can we maintain proper patient care at that call volume.

Another concern is the Fire Chief has requested we transport 20 percent of the emergency call volume within the city. To do this, our rescues are required to transport two patients per day to the hospital; currently, they are transporting one patient per day and relying on the ambulance company to transport the rest. This change will probably double our transport time and no one knows what effect this will have on the workload for our rescue crews.

To date, Las Vegas Fire & Rescue does not know how many calls an emergency unit can respond to in a 24-hour shift. The importance of having this knowledge is that policy makers, armed with this information, will then have the ability to monitor a stations call volume and be

able to predict or determine when additional emergency units need to be placed into service to assist with emergency calls, distributing the call volume evenly, and placing a realistic and accomplishable work load on our employees, which in turn will assure good patient care and good employee morale.

This research paper is related to the Executive Leadership course work, as it relates to workload management and goal setting.

LITERATURE REVIEW

The literature review began with a review of applicable standard, laws and training requirements. Including National Fire Protection Association (NFPA) Regulation 1500 for a list of mandatory training. The Las Vegas City Risk Manager and Human Resources of the City of Las Vegas were contacted for information regarding other city-required training. Since Las Vegas is interested in maintaining their Class I ISO rating, the ISO requirements for insurance ratings were reviewed as a guide for required non-emergency activities. OSHA was another resource referenced for required training classes. Laws and literature regarding work schedules and sleep studies were reviewed regarding 24-hour work shifts. The effects of sleep deprivation were explored. Literature on required fire training, as well as administrative federally required training, were retrieved. Local Emergency Medical Training requirements were retrieved from the local authority having jurisdiction (The Clark County Health District). Emergency response information was researched and extracted from our dispatch computer for statistical information

for the department and specifically Station One to determine their call type and time on task involving each call. Additional research was conducted to determine the actual time personnel spent entering different types of run reports into their computer and station logbooks.

Administrative considerations

In the textbook titled Managing Fire Services, which is published for the International City Management Association (ICMA), it is learned that managing resources is a complex task that is key to the success of an organization. The proper use and development of people, things, and money will, to a great extent, determine the success of a fire department in achieving its goals and objectives (Coleman, 1999).

The fire service manager must balance needs with resources. Deployment decisions must be based on an analysis of all tasks to be accomplished. Whether formal or informal, the analysis must define the elements of the overall task and the exact number of people required to do the task at an appropriate level. Cost effective utilization of staff have focused on defining the hours and geography of increased fire, emergency medical, inspection, and other workloads. Increasing (or diminishing) staff assignments according to demand has been a successful strategy in a number of cities (Coleman, 1999). From this statement, the author of this paper has determined that we need to define the activities and associated time frames attached to the various assignments in which rescue personnel participate. These activities can be categorized as emergency activities, non-emergency activities (administrative assignments). Not all activities assigned to rescue personnel are emergency related; yet they consume a certain portion of their day. Which, in turn, limits the actual amount of time available to respond to emergency calls. Even though we will respond to any emergency 24-hours a day on any given day of the year,

there are not 24 hours always available for emergency responses. Because other non-emergency assignments and responsibilities are given to our personnel, it takes time out of their 24-hour shift.

The main strategy for establishing fire stations throughout a city is to provide acceptable response time for ISO (Insurance Services Office) ratings. A study of 1400 fire departments showed that the response time for fully paid departments averaged 3.8 minutes. The average time for the longest run to areas with structures was 7.9 minutes. The ISO Rating Schedule states, "built up areas of a city should have a first due engine within 1.5 miles and a ladder company within 2.5 miles" (Chief Officer, 1993). Las Vegas Fire & Rescue has kept with this strategy, and it is one of the factors that contributed to its ISO Class I rating. However, we need to look at call volume within a given district, and develop a workload standard that can be customized for each district, depending on the demographics of each district.

The establishment of the length of our work shift including approved rest periods and meal times is an important determinant to the establishment of the workload. The workweek for firefighters is 53 hours for a 28-day period. Sleep-time can be excluded from compensable hours of work, for firefighters who are on a 24-hour tour of duty or longer, but only if there is an express or implied agreement between the employer and the employees to exclude such time. In the absence of such an agreement the sleep-time is compensable. The regulation says that the employee is entitled to a "reasonable" night's sleep, not to exceed eight hours and no less than five hours. The regulation however, does not state exactly how many hours constitute a 'reasonable" night's sleep. The fire department may exclude mealtime from hours worked, provided that the employee is completely relieved from duty during the meal period (Hogan, 2000). The City and the Union agree that the work day, and work week, including paid meal periods for fire combat

personnel, are a normal work day of 24 hours and a normal work week of 56 hours and 112 hours bi-weekly (Local 1285, 1994-1997). Since there is no expression of implied agreement between the City and the Union to exclude sleep time, and the contract does state that meal times are paid, both will be considered part to the 24-hour shift. Additionally, it is reasonable to conclude that a reasonable night's sleep is considered to be anywhere between five (5) and eight (8) hours.

The International Association of Fire Fighters has established what they consider is a safe and reasonable workload for EMS personnel working a 24-hour shift. They have established a 0.3 unit hour utilization rate. Unit hour utilization measures the usage of a fully equipped and staffed response vehicle available for dispatch. It is appropriately used, however, only as an indication of appropriate resource deployment. A unit hour utilization ratio approximating 0.3 should be adequate to allow personnel to keep their skills sharp, while not risking employee burnout. EMS systems, with a unit hour utilization exceeding 0.3, are being used to their breaking point (International Association of Fire Fighters, 1995).

The public often questions the subject of firefighters sleeping on duty; often they express disapproval of this "unproductive" downtime.

Sleeping does not qualify as an administrative assignment nor does it qualify as an emergency assignment. Yet sleeping is a necessary component in a firefighters busy schedule. Currently all Las Vegas Fire & Rescue suppression personnel operate on a 24-hour long work shift with a 56-hour workweek. There may be advantages to a 24-hour shift, but it is unrealistic to operate a scheduled shift of that length without planning for a significant rest period. Fatigue effects productivity, safety, morale, and general job performance. If long shifts are selected, fatigue

must be managed. Fire suppression personnel should be in a reasonable state of physical and mental readiness, at all times during their shift (Coleman, 1999).

A recent study showed that people who were awake for up to 19 hours scored worse on performance tests and alertness scales than those with a blood-alcohol level of .08 percent, legally drunk in some states. If they've pulled an all-nighter, pilots, surgeons or the people responsible for charging your credit-card account might as well be drunk (Brink, 2000).

Busy EMS systems need to examine the liability of routinely having personnel awake for 24 hours at a time. Traditional fire service schedules generally are based on either a 24-hour schedule or a combination 10-hour and 14-hour periods. The viability of ambulance personnel working on a 24-hour shift will be dependent upon the call volume of a particular ambulance unit. There is a large segment of the EMS community which maintains that patient care toward the end of a 24-hour shift suffers because the ambulance personnel are more tired; however, there have been no formal studies comparing medical protocol error rates based on the numbers of hours that a paramedic has been on duty. In many states, laws exist to limit the number of consecutive hours hospital doctors may be on duty at a time. There is probably a solid argument to be made that EMS personnel are subject to the same fatigue factors as doctors, and they, therefore, should have their duty hours limited a swell (Implementation of EMS in the Fire Service, 1997).

Administrative Assignments

To determine what fire Station One's rescue personnel administrative assignments or duties were the author of this paper interviewed the Captain on each platoon (A,B, and C) at Fire Station One (who supervise the medics) to find out what those responsibilities are, and how much time is

allowed to complete those assignments. For a detailed explanation of the questions asked, see Appendix B; and for the complete results of the interviews, refer to Appendix C.

To summarize the results of each platoon, the captains assign between 6.3 and 6.9 hours a day to job related administrative duties, which include morning meetings, details, checking out their equipment and rescue unit, restocking and cleaning the unit, personal details and station details. Also included but overlooked in the interview is the wake up call, which is sounded through each station (at 07:00AM) to assure all employees are up and preparing for a smooth shift change. This time period also includes lunch, dinner and a period of time for their required physical training.

The 6.3 to 6.9 hours does not include required training hours, nor does it account for travel time to and from our training facility. Additionally, it should be pointed out that there are many activities that take up the rescue personnel's time that do not manifest during an everyday schedule such as station tours, new employee and rescue partner orientation, assisting with hydrant testing, school drills, in district inspections, lesson preparation time, ride-a-long interviews, employee interviews. etc.

Required training

The following training recommendations have been extracted from the following reference material: Las Vegas Training Plan 2000, NFPA 1500,Clark County Health District Regulations, The Employees Guide for /City Employees, Fire Suppression Rating Schedule (ISO), Fire Suppression Rating Schedule Handbook.

- The fire department shall provide training and education for all fire department members commensurate with the duties and functions that they are expected to perform.

- All members' who engage in emergency medical services shall meet the requirements of the authority having jurisdiction.
- All members shall meet the training requirements for infections disease controls specified in NFPA 1581, the standard on fire department infection control program (four hour refresher).
- All members who respond to incidents involving the release or potential release of hazardous substances shall meet the requirements for first responder operation level, as specified in NFPA 472, Standard for Professional Competence of Responders to hazardous materials incidents (eight hour refresher).
- All members who engage in emergency operations shall be trained commensurate with their duties and responsibilities. Training shall be as frequent as necessary, to ensure that members can perform their assigned duties in a safe and competent manner, but shall not be less frequent than specified in this section.
- Members who use respiratory protection equipment, such as emergency incidents or in hazardous or potential hazardous atmospheres, shall be qualified to use respiratory protection (Four-hour refresher course).
- Where the fire department is responsible for structural firefighting operations, the fire department shall provide structural firefighting training at least monthly. Members who engage in structural firefighting shall attend a minimum of 10 monthly structural fire-fighting training sessions. Members shall participate in at least 24 hours of structural fire fighting training annually (NFPA 1500, 1997).
- CEVO training or driver operator training will be held twice each shift per year.

- Monthly continuing education, topics for continuing education at the company will be established by the training division and distributed to all stations on a monthly basis.
- There will be 12 required company-training lessons, each lesson will be sent out to the stations in a packet.
- There will new eight (8) company drills, and two (2) multi-company night drills required annually.
- There will be session training held at the end of each quarter. There will be three (3) sessions of approximately three to four hours (Training Plan 2001, 2000).
- prior to re-certification each EMT-P, and EMT-B shall complete at least the minimum required hours of continued medical education (CME) for his or her certification level as approved by the Health Officer. The requirement shall not be less than 60 hours for EMT-P re-certification, 36 hours for EMT-I re-certification, and 24 hours for EMT-B re-certification. The renewal of the respective certificates shall be valid for two years (Clark County Health District, 1999).
- Mandatory training at least once every two years (four hour refresher) all city employees are required to attend in-house training in sexual harassment prevention, workplace violence prevention, and drug and alcohol awareness (An Employees Guide to City Employment, 2000).
- To get credit for training there shall be eight (8) company drills per year, four (4) multi-company drills, and two (2) night drills per year.
- There shall be 40 hours of training for new drivers and operators.
- There shall be one (1) half-day training class per member per year for radioactive training.

- Pre-fire planning inspections of each commercial, industrial, institutional and other similar type building should be made twice a year.
- Hydrants shall be inspected annually (Fire Suppression Rating Schedule, 1998).
- In regard to company drills, there will be a minimum total of eight (8) drills, with a minimum total of 24 hours of which two will be night drills.
- Company training can be credited up to 20 hours per member per month, and is intended to develop skills related to fire suppression (i.e. hose, ladders, SCBA, forcible entry, salvage, tactics, etc.).

The training item in the grading schedule is one of the most important topics evaluated for two reasons. Studies of fire department effectiveness clearly indicate there is a positive correlation between levels of fire fighting training and reductions in property loss from working type structural fires. The better the training in basic fire suppression skills the higher the value of property saved during a fire. Training accounts for 9 percent of total city grading. This weight represents nearly one class level. The continual maintenance of firefighting skills is essential to effective fire suppression operations. The focus of the grading schedule is that all fire suppression personnel complete the prescribed training on an annual basis (Hickey, 1993).

Summary of annual training requirements specifically related to rescue personnel:

Driver operator / CEVO training -	4 hours
Company drills (eight) -	24 hours
Company training -	20 hours
Session training -	12 hours
Blood bourn pathogen protection -	4 hours
Haz-Mat 24-hour responder refresher -	4 hours

SCBA and Hepa-mask fit testing -	4 hours
EMT-P continuing education -	30 hours
City mandated training -	2 hours
New Engineer training -	40 hours
Radioactivity training -	4 hours
Pre-fire planning -	12 hours
Total annual required training time -	164 hours

Individual firefighters are allowed up to one-month annual leave and up to six (6) unexcused sick leave incidents (Local 1285, 1994-1997). Therefore, it would be considered prudent to consider that any employee could be off work for up to two months during the year. Therefore, the required training should be scheduled for a ten (10) month period. This will allow for absences and make up classes as required.

The 164 hours of required training should therefore be divided into ten (10) time periods.

One hundred sixty four dived by 10 equals 16.4 training hours per month per firefighter. Because of weekends and holidays available training days, there are on average seven (7) training days available per month. Therefore, 16.4 dived by seven (7) equals 2.343 training hours per day. Add one half hour per shift for travel time for 2.84 hours per shift for training, which can be rounded off to three hours (3) per shift for training.

PROCEDURES

The research procedure used in preparing this paper began with a literature review, which included the Learning Resource Center at the National Fire Academy in Emmitsburg, Maryland. The authors own personal library and the department's library, and local libraries for information related to the topics of EMS workloads, shift duration, sleep deprivation, including any information, laws, or regulations regarding training requirements or workload staffing as it relates to emergency services.

Statistics were extracted from our dispatch and mainframe computer related to call volume and other workload issues.

Personal research was conducted through individual interviews of station captains from all three platoons at Station One, to determine what the current non-emergency workload requirements for medics assigned to rescue units at station one. One hundred and seventy seven emergency calls were randomly selected and statistically evaluated to determine:

- The percentage of occurrence, and type of call they receive,
- Time spent on the event. (Time of alarm to time available),
- Time spent documenting run reports, and entering run information in station logs,
- Computing total time spent on task (from alarm to completion of paperwork).

Lists of non-emergency administrative activities were created, followed by a list of on duty training requirements, including any travel times associated with the classes.

Travel-time associated with a rescue returning from the hospital to their first in district was also taken into account.

Time allotted for sleep (Fatigue management) was figured into the equation. Finally, available emergency response time was evaluated into each 24-hour shift, by subtracting the following items from the 24 hours in a shift:

- Time allotted to non-emergency administrative activities,
- Time for required training and associated travel time,
- Time for sleep (Fatigue management).

This left seven (7) hours for emergency responses.

By taking a large random sample of emergency calls received at that station and dividing the calls into categories we could accurately determine the percentage and type of calls received in an average shift. Additionally, the average length of time spent on each type of call was determined (See Appendix A).

By computing the average type and length of calls, we can then interpolate the amount of calls a single transporting unit should be able to handle on any given tour of duty.

The volume of EMS calls will determine the number of rescue units that should be assigned to Fire Station One.

Limitations

This research project was limited by a number of factors:

1. The computer entry times are only as accurate as the information reported; there might have been some pressure on the medics to report shorter computer entry times than actually took place, in an effort to impress their supervisors or peers. Additionally, some medics may not have taken the study seriously and reported inaccurate times.

2. There are activities throughout a firefighter's day that cannot be quantified, or do not occur consistently enough each day to be considered a daily reoccurring activity. However, these activities do take a significant amount of time, some of those activities include, ride-alongs, station tours, hose testing, quick access preplans, hydrant testing, driver training, Scholl drills, EMS rookie training, and annual ALS Health District Inspections
3. In determining time frames for activities carried out during the shift, the time associated with a rescue returning from an incident or a hospital was not captured. This time frame was difficult to isolate, as units would often receive back-to-back calls. The problem lies in that it can take up to three to five minutes just returning from a call, when a unit is in fact available. The unit may be available, but since it is out of its assigned station, the crew cannot address other assignments until they return to the station. Essentially returning from a call is time actually lost during the shift.
4. The time frames attached to transporting a patient to a hospital is based on the receiving hospital being able to quickly transfer that patient from the ambulance to one of their hospital beds. This is not always the case in Las Vegas, as we have a serious hospital "divert" problem, which often causes delays of an hour or more.

Definition of terms

Burnout: A state referred to when an employee is overworked and stressed to the point they loose interest in their job.

CEVO: A driver training class taught to employees who drive emergency vehicles code three (lights and sirens).

Divert: Term used to describe a hospitals emergency room status, if they are on divert, they can only accept true life threatening cases.

Sleep time: Time spent waiting on emergency calls or managing fatigue.

EMS: Emergency Medical Services.

EMT: Emergency Medical Technician. There are several levels of training; there are Basics, Intermediates, and Paramedics. Each level provides a progressively higher level of patient care skills.

IAFF: International Association of Firefighters, the firefighters union representation at the national level.

Muster: Morning meeting of fire crews, company officers use this meeting to confirm apparatus assignments, update personnel on important department information and confirm the daily schedule with crew members.

MVA: Motor Vehicle Accident.

Rescue: An emergency response vehicle, an advanced life support ambulance equipped with extrication equipment and self-contained breathing apparatus, turnout gear and various other small tools for firefighting and EMS delivery.

Rescue Duty: Term describing personnel assigned to work on the rescue.

Shift: A 24-hour work period. From 7:30 a.m. to 7:30 a.m. the next day.

Tour of duty: Same as a shift, a 24-hour work period.

U:UH: Unit hour utilization, a method of measuring productivity. The number will be from 0 to 1. A unit hour utilization of 0.5 represents a unit being engaged in emergency activities 50 percent of the time during a 24- hour shift.

RESULTS

Answers to Research Questions

Research Question # 1. What are the non-emergency daily activities assigned to crewmembers at Station One, and what are the time frames attached?

The non-emergency daily activities are divided into three (3) categories:

1. Annual training.
2. Administrative assignments and responsibilities.
3. Time spent waiting for emergency calls.

The annual training requirements are classes and drills in the following areas:

- Driver operator or CEVO (defensive driving).
- Company drills.
- Company training.
- Session training.
- Blood bourn pathogen protection.
- Haz-Mat 24-hour responder refresher.
- SCBA, and Hepa-mask fit testing.
- EMT-P continuing education hours.
- City mandated training.
- New Engineer training.
- Pre-fire planning.
- Radioactivity training.

The total training hours required to complete the annual training is 164 hours.

Considering we will use 10 months of the year for training to allow for annual leave, and sick leave, and that there are seven (7) shifts on average per platoon a month to train in, and that it takes 15 minutes travel time to get to the training center, it works out to 2.8 hours of training per shift. This number as rounded to three (3) hours per shift.

Administrative daily assignments and responsibilities for the employee includes:

- Morning muster.
- Equipment and unit checkout.
- Personal details.
- Station details.
- Physical training.
- Meals (lunch and dinner).
- Re-supplying the station's medical stock.

Between all three shifts, these assignments take between 6.3 and 6.9 hours per day. This number was rounded to seven (7) hours per shift.

Time spent waiting for emergency calls (sleep) is governed by FLSA laws, which require the employer to provide a reasonable night sleep, which is between five (5) and eight (8) hours. Las Vegas Fire & Rescue will allows seven (7) hours waiting time based on the sleep deprivation study and the need to manage fatigue. These results are expounded on further, in the unexpected findings section of this paper.

Research question # 2. What are the daily emergency activities of crew assigned to fire station one, and the time frames attached?

To answer question # 2, a random sample of 177 emergency calls were collected and categorized into the following seven (7) areas:

1. Routine calls, canceled, no patient care initiated by fire personnel,
2. MVA, fire department transports,
3. MVA, patient assessment, no transport,
4. Medical, ambulance co. transports,
5. Medical, fire department transports,
6. Medical, patient not transported,
7. Fire or other related calls.

Through the data collected it has been determined (See Appendix A) that it takes a crewmember an average of 1.48 minutes to log each run into their station log, and that the call volume is comprised of:

1. 40 percent routine calls.
2. 5 percent MVA's with fire department transporting.
3. 10 percent MVA's without any patient transport.
4. 28 percent medical calls with the private ambulance company transporting.
5. 4 percent medical calls with the fire department transporting.
6. 10 percent of the medical calls do not require and patient transportation.
7. 3 percent of the emergency calls are fire or related calls.

From the time the alarm sounds in the station untill the run report is complete takes:

1. 17.25 minutes for routine calls.
2. 67.8 minutes for MVA's with a patient transport.
3. 22.8 minutes for a MVA without a patient transport.

4. 35 minutes for a medical call where the private ambulance transports.
5. 69.4 minutes for a medical call where the fire department transports the patient.
6. 26.5 minutes for a medical call without a patient transport.
7. 47 minutes for fire or other related call.

Research question # 3. What is a realistic workload for emergency responders?

To determine the realistic workload, a determination of emergency and non-emergency activities were determined. First, the author defined the non-emergency activities, mentioned previously in the answer to question # 1 (also see Appendix E, "Work load work sheet), which is approximately 17 hours. Subtract 17 hours from a 24-hour shift, or tour of duty, and it leaves seven (7) hours for emergency responses. It is important to note the Las Vegas Fire & Rescue requires its personnel to transport two (2) patients a day to the hospital. Thus category # 2 and category # 5 were computed to have one transport in each category, thus satisfying the two a day transport requirement. The remaining table was figured using the remaining non-transport categories. As you will note in Appendix E, the final emergency workload for a transport unit stationed at station one is a maximum of 13 emergency calls per shift.

Unexpected findings

The unexpected findings in this paper revolved around the sleep deprivation study found in the article in U.S. News & World Report, "Sleepless in America". The author, Susan Brink, states, "A recent study showed that people who were awake for up to 19 hours scored worse on performance tests and alertness scales than those with a blood-alcohol level of .08 percent" (Brink, 2000). This is legally drunk in our state. The article goes on to comment, "If they've

pulled an all-nighter, pilots, surgeons, or the people responsible for charging your credit-card account might as well be drunk" (Brink, 2000). I am uncomfortable with that idea alone, not to mention that it is not a good idea to have people driving code three in this altered state, making life and death decisions for critically acute patients.

Fatigue not only affects productivity, but also morale, and job performance. Fatigue must be managed. Fire suppression personnel should be in a reasonable state of physical and mental readiness, at all times during their shift (Coleman, 1999).

Las Vegas Fire & Rescue has a busy EMS delivery system, it would be wise for us to examine the liability of routinely having personnel awake for 24-hours at a time (Implementation of EMS in the Fire Service, 1997).

Traditionally, fire service schedules are based on a 24-hour schedule or a combination of 10 and 14-hour periods (Implementation of EMS in the Fire Service, 1997). The 10 and 14-hour shifts have been tried here in Las Vegas many years ago but were not accepted well with the personnel. Administration was forced to return to the 24-hour shift (They were plagued with sick leave abuse and the resulting required overtime issues were not cost effective). Currently, our fire investigations unit utilizes the 10 and 14-hour shifts and enjoys it very well. They also have only eight personnel assigned to that division. If Las Vegas was to entertain another look at a 10 and 14 hour shift for suppression personnel, it would require hiring a fourth platoon which would cost a little over 11 million dollars. This does not seem like a viable option for the city or its constituents. Therefore, knowing we will continue with the traditional 24-hour shift for suppression personnel, it is important that we manage the fatigue factor and allow for reasonable rest periods (Coleman, 1999).

Additionally, it has been discovered that a lack of sleep may lead to health hazards, by lowering the immune system (Brink, 2000). Sleeping while on duty should not be considered wasted down time, but an effort to keep personnel rested and in an alert state of mind. It should be considered an important part of the employee's health and wellness program, just as physical training, annual physicals and good eating habits are today. Sleep resettles us emotionally, cognitively and immunologically (Brink, 2000).

The author of this paper feels that planning for seven (7) hours of rest, during a regular 24-hour shift, is reasonable considering that an employee will typically prepare for their workshift by waking up at around six in the morning, and by midnight will have been awake for 19 hours. By then, their performance skills and mental alertness will be deteriorating. It makes sense that they should be allowed to rest. Historically, our department sounds a wake up bell through all stations at seven in the morning to alert all personnel to wake up, clean their personal area and prepare to brief the on-coming shift. A theoretical rest period from midnight to seven in the morning (7 hours) only makes sense. Not only does a rest period benefit the department, by reducing liability, but it will also reduce sick leave and overtime issues, and improve our health and wellness program.

DISCUSSION

The study results revealed that it is management's responsibility to manage the employee's workload. An organizations success largely depends on how well management does in managing all of its resources (Coleman, 1999). Our frontline managers (captains) have done a good job assigning necessary daily administrative assignments to their rescue personnel, giving them

reasonable time frames to accomplish those assignments, approximately seven (7) hours per shift (See Appendix C Station One Interview Results).

However, beyond allowing assigned personnel to rotate from a transporting rescue unit to an engine company, management (frontline or above) has done little to address the heavy workload issues. Unit rotation often only transfers an employee from one busy unit to another busy one. Our call volume has increased to the point that we have to consider not only station location for rapid response times, but we must consider the call volume in those areas as well (Coleman, 1999).

It is necessary to consider more than just administrative responsibilities and how long they take; all assigned activities formal and informal need to be reviewed and consideration given to the associated time frames (Coleman, 1999).

The activities to be considered are: non-emergent administrative; required annual training; waiting time (sleep); and emergency response activities.

A randomly sampling of 177 emergency calls allowed the author to calculate the percentage, type and length of time spent on emergency calls, as well as recording the time it takes to enter the call into the computer and station log. This, allowed the author to determine the total time spent on emergency related activities for any given volume of emergency calls.

The break down of call types, percentages and time on task are as follows:

1. 40 percent routine required an average of nearly 17.5 minutes to complete.
2. 5 percent MVAs with the fire department transporting, which takes an average of nearly 68 minutes to complete.
3. 10 percent MVAs requiring no patient transportation; these calls average nearly 23 minutes to complete.

4. 28 percent medical calls where the private ambulance company transports, and takes on average of just over 35 minutes to complete.
5. 4 percent medical calls where the fire department transports, requiring an average of just over 69 minutes to complete.
6. 10 percent medical calls without any patients being transported, requiring an average of 26.5 minutes to complete.
7. 3 percent of the calls are fire or other related call requiring on average 47 minutes to complete. (See appendix A).

Waiting time for calls or sleeping on duty is a touchy subject that needs to be addressed. The study revealed that fatigue management is a critical component in managing resources as it effects productivity, safety, morale, and general job performance (Coleman, 1999).

A recent study showed that people who were awake for up to 19 hours performed as though they were legally drunk on alertness and performance tests (Brink, 2000). The study went on to reveal that a large segment of the EMS community feels that patient care toward the end of a 24-hour shift suffers, because the personnel are tired. There is a solid argument for the management of fatigue (Coleman, 1999). The reader can find more information on the subject, in the unexpected findings section of this paper.

Sleeping on duty should be accepted as part of a firefighters daily schedule as is physical training, annual physicals, and good eating habits. It should be part of our wellness program (Implementation of EMS in the Fire Service, 1997).

FLSA laws address the hours a firefighter is paid. It is determined that a firefighter will be paid 53 hours for a 28 day period, and that the employee is entitled to a “ reasonable” nightsleep, not to exceed eight hours and no less than five hours (Hogan, 2000). Additionally, the department

may exclude mealtime from hours worked, if the employee is completely relieved from duty (Hogan, 2000).

The city and union agree that the workday, and workweek, including paid meal periods for fire combat personnel are 24-hours a day with a normal workweek of 56-hours bi-weekly (Local 12285, 1994-1997). With this information and the sleep deprivation study, it stands to reason that at least seven hours be set aside for fatigue management. Based on the fact that the average fire employee gets up at 6:00 a.m. and by midnight they would be operating at a legally drunk level of coordination and alertness (Brink, 2000). If allowed to sleep from midnight to seven in the morning, barring any emergency calls, crew would accrue seven hours sleep by the time the seven o'clock wake up alarm sounds.

Required annual training composed a large portion of the literature review. To summarize, our annual training requirements will take at least 164 hours annually to complete. Firefighters are allowed up to one-month of annual leave and up to six (6) sick leave incidents per year (Local 1285, 1994-1997). It is, therefore, reasonable to conclude that the training sessions should be completed in a 10-month period. This will require that 16.4 hours per employee be completed per month. By reviewing the platoon calendar, we can identify on average that there are seven training days available per platoon, per month. This is due to weekends and holidays etc. Therefore, the 16.4 training hours need to be divided by seven, leaving 2.8 hours per shift of training time. Per Appendix C, the station captains identified travel time to the training center was fifteen minutes each way. This which would add a half hour to the daily training time, so training for station one would equal 2.8 or roughly three (3) hours per shift.

Interpreting the results of the study, we find that in a 24-hour shift or typical tour of duty a firefighter assigned to rescue duty will spend:

- Seven (7) hours engaged in administrative daily duties (appendix C.),
- Three (3) hours spent in various daily training classes,
- Seven (7) hours engaged in managing daily fatigue (sleep) (see appendix E).

These non-emergency activities take up to 17 hours of a firefighters 24-hour shift, leaving seven (7) hours to respond to emergency calls. Obviously, emergency calls receive priority. Neverthe less, the non-emergency activities must be complete or we will encounter system failures and employee burnout, or worse. Patient care may be compromised (Brink, 2000).

The study results indicate that transport units and crewmembers assigned to Station One are being overworked, with up to 31 emergency calls per shift for Rescue One (SunPro, 2000). The administrative responsibilities such as checking out their rescue units and related equipment are being neglected as is their drug logs, and on occasion patient reports. Meals are missed and sleep is a topic laughed at, at Station One. With 31 emergency calls in a shift rescue personnel are being overworked and management is risking “burning them out” (International Association of Fire Fighters, 1995).

Thirty one calls a shift takes up to 15 hours to complete, which equals a .62 U: UH. This grossly exceeds the IA FF 0.3 U:UH workload recommendation. It represents twice the recommended workload (International Association of Fire Fighters, 1995).

Currently, we are not managing the fatigue factor very well (Coleman, 1999).

With 31 calls a shift, the emergency load alone for Rescue One is 15 hours a day spent engaged in emergency call activity (Note appendix A. summary of findings). This represents a unit hour utilization of over 0.62, which is 32 percent over what the IAFF recommends as a healthy combination of administrative activities and emergency activities. The IAFF recommends a 0.3 unit hour utilization (international Association of Fire Fighters, 1995).

To achieve the IAFF recommended 0.3 U:UH; an emergency response unit and its crew should be engaged in emergency activity 7.2 hours of the day (International Association of Fire Fighters, 1995). Responding to 13 emergency calls per shift will place any transport capable unit at Station One right at the 0.3 U:UH recommended by the IAFF.

The implications are that the managers of Las Vegas Fire & Rescue will need to take the steps necessary to allocate the runs appropriately, by adding additional rescue units staffed with appropriate personnel. This will limit their emergency call volume to 13 calls per transport unit per shift (See appendix E).

RECOMMENDATIONS

The author of this research project has concluded that an acceptable workload for firefighters assigned to transport units at station one is a maximum of thirteen (13) emergency calls per 24-hour shift. This includes transporting two (2) patients to the hospital per day and meets the department's goal of increasing our transports to 15-20 percent.

The next step is to determine the emergency call volume at Station One and divide the EMS calls by 13. This number will provide the total number of rescue units needed at station one to safely respond to the EMS and other related calls. Then, implement and evaluate it in practice. After a trial period, it should be developed into a policy and set in place. To do this, the EMS Committee and the Safety Committee should meet together, to discuss the implication this will have on our department.

The EMS and Safety Committee are two committees in this department that have the most influence on departmental change. Both committees have an interest in this project. The Safety

Committee has expressed a concern that the crew at Station One is overworked with emergency calls. That it may contribute to unsafe working conditions. The EMS committee is also concerned with the call volume our personnel are handling in a 24-hour shift. Both committees are comprised of a combination of labor and management and will work to the good of the department, meeting the goals of labor and management. Once this program is implemented at Station One and evaluated and finally turned into policy, it is recommended that this same procedure be taken at every station throughout the department.

Each stations emergency response area will have slightly different demographics, such as call type and call volume. Some captains will assign details differently. Others may have long response times or long distances to travel to training or from hospitals. These items all need to be accounted for, to accurately determine our emergency crews time on task workload.

A similar process should be completed for engine companies and their workload, although it should be noted that an engine company's responsibilities are much different than a rescue's and those areas need to be identified and taken into consideration as well. The process would be incomplete if the truck companies were not included, their workload should also be established using the same process.

REFERENCE LIST

An Employees Guide to City Employment. (2000). Las Vegas, NV: Human Resource Department.

Blue Ribbon Panel: 2000 – Emergency medical Services Blue Ribbon Panel Report [Electronic Data File], Las Vegas, Nev.: Las Vegas City (Producer and Distributor).

Brink, S. (2000). Sleepless Society. *U.S. News.* 62 –72.

Chief Officer, (1993). *Chief Officer,* international Fire Service Training Association (IFSTA). Stillwater, OK. (pp. 56 – 57).

Clark County Health District. (1999). *Emergency medical Services Regulations.* Las Vegas, Nev: Clark County Health district.

Coleman, J.R., & Granito, J. A. (1999). *Managing Fire Services:* (2nd. Ed.). International City management Association.

Fire Suppression Rating Schedule (08-98 ed.). (1998). ISO Insurance Services office, Inc. (pp. 30 – 37).

Hickey, Harry E., (1993). *Fire Suppression Rating Schedule handbook.* Professional Loss Control Education foundation. (pp.155 – 163).

Hogan, Lawrence J., (2000). *Legal Aspects of the Fire Service. (3rd. Ed.).* Frederick, MD: Amlex. (pp. 123 – 138).

Implementation of EMS in the Fire Service, (1997, April). Federal Emergency management Agency, United States Fire Administration. (pp. 47).

International Association of Fire Fighters. (1995). *Emergency medical Services, A guide book for fire-based systems.* Washington, DC: Author. (pp. 11).

Local 1285, (1994 – 1997). *An Agreement Between The City Of Las Vegas, Nevada and The International Association of Fire Fighters,* Local 1285 Non-Supervisory 1994 – 1997. Las Vegas, NV: Local 1285. (pp. 36, 43).

NFPA 1500, (1997). *Fire Department Occupational Safety and health Program,* national Fire Protection Association.

Randleman, W. (1980, November). Paramedic burn out. *FIRE CHIEF*. 27 – 33.

SunPro [Tri-Tech}. (2000). City of Las Vegas, Fire Services.

Training Plan 2001, (2000, December). Las Vegas Fire & Rescue, Training Division. Las Vegas Nevada: Author.

APPENDIX A

Run Report Times
(in minutes)

Run Types:

1. Routine call, canceled, no patient care initiated by Fire Department.
2. MVA, Fire Department transport.
3. MVA, Patient assessment, no transport.
4. Medical, ambulance co. transports.
5. Medical, Fire Department transports.
6. Medical, patient not transported.
7. Fire of other related calls.

	Run#	Type	Computer entry time.		Log time	On Call Time.
1.	1026896	4	:23			:51
2.		4	:27			
3.	1027843	1	:01			:36
4.	1027862	1	:03		:02	:13
5.	1027869	4	:17		:02	:34
6.		2	:05			
7.		2	:11			
8.	1050341	2	:25	(on scene time 15 min.)		:19
9.	1050906	2	:07			
10.	1051457	2	:09			:37
11.		4	:07			
12.	1057519	4	:11			:121
13.	1057496	4	:06			:34
14.	1057521	3	:05		:01	:10
15.	1057430	1	:02		:01	:32
16.	1057570	1	:02		:01	:18
17.	1057608	4	:07		:01	:20
18.	1057627	5	:07		:01	:44
19.	1057650	1	:03		:01	:23
20.	1057676	1	:02		:01	:05
21.	1057685	4	:10		:01	:75
22.	1057736	4	:09		:01	:20
23.	1057785	4	:04		:01	:58
24.	1057796	1	:02		:01	:06
25.	1057808	1	:02		:01	:13
26.	1057828	1	:02		:01	:21

27. 1057484	5	:02	:01	:48
28. 1057519	4	:01	:01	:12
29. 1057612	3	:01	:01	:07
30. 1057746	5	:10	:01	:106
31. 1058531	1	:10	:05	:09
32. 1058635	4	:24	:02	:30
33. 1058657	4	:23	:02	:23
34. 1058683	1	:05	:02	:08
35. 1057948	1	:01	:02	:14
36. 1058107	1	:01	:01	:50
37. 1058173	1	:02	:01	:40
38. 1058284	1	:02	:01	:32
39. 1058333	1	:02	:01	:10
40. 1058440	4	:05	:01	:14
41. 1057659	3	:11	:02	:12
42. 1057923	1	:03		:11
43. 1057929	1	:03		:16
44. 1057949	1	:02		:05
45. 1057960	6	:03		:17
46. 1057981	1	:03		:11
47. 1058036	1	:04		:08
48. 1058046	1	:02		:14
49. 1058074	1	:04		:08
50. 1058184	4	:04		:24
51. 1058112	1	:03		:14
52. 1058127	3	:05		:20
53. 1058143	1	:02		:19
54. 1058168	1	:02		:19
55. 1058188	1	:02		:15
56. 1059077	1	:02		:15
57. 1059130	1	:03		:10
58. 1059151	5	:04		:86
59. 1059461	6	:10		:20
60. 1059504	6	:05		:12
61. 1059509	1	:02		:09
62. 1060742	4	:11		:15
63. 1060752	6	:09		:13
64. 1060810	1	:02		:14
65. 1059260	1	:04	:01	:07
66. 1059270	1	:01		:22
67. 1059284	1	:02		:13
68. 1059350	1	:01		:08
69. 1059393	4	:12		:22
70. 1059407	1	:04		:17
71. 1059434	4	:11		:17
72. 1059557	6	:06	:01	:26

73. 1059575	4	:02	:01	
74. 1059604	4	:02	:01	:23
75. 1059628	4	:02	:01	:17
76. 1061135	1	:04		:07
77. 1061151	4	:09		:14
78. 1061183	4	:09		:18
79. 1061213	1	:02		:06
80. 1061322	1	:02		:13
81. 1061375	1	:03		:25
82. 1061302	3	:09		:21
83. 1061408	1	:03		:10
84. 1061258	3	:21	:02	:16
85. 1059090	3	:01		:08
86. 1059120	1	:01		:06
87. 1059151	4	:01		:76
88. 1059213	1	:01		:04
89. 1061770	3	:02	:01	:19
90. 1061793	3	:02	:01	:48
91. 1061868	3	:04	:01	:24
92. 1061814	3	:04	:01	:25
93. 1061922	3	:04	:01	:10
94. 1061983	3	:02	:01	
95. 1062049	3	:15	:01	:17
96. 1062145	4	:15	:01	:34
97. 1062141	3	:04	:01	:13
98. 1062203	1	:04	:01	:07
99. 1062256	1	:10	:01	:30
100. 1062231	4	:22	:01	:32
101. 1061795	4	:15	:01	:07
102. 1062039	4	:03	:01	:06
103. 1062150	1	:04	:01	:13
104. 1062211	4	:25	:01	:57
105. 1062236	4	:02	:01	:23
106. 1064704	1	:03	:02	
107. 1064742	1	:02	:02	:15
108. 1064929	3	:03	:02	:11
109. 1062959	4	:02		:19
110. 1062996	7	:04		:16
111. 1063010	7	:04		:41
112. 1063032	5	:10		:84
113. 1063103	6	:02		;14
114. 1063116	7	:03		:07
115. 1063133	6	:02		:12
116. 1063163	4	:02		:07
117. 1063172	4	:25		:26
118. 1063196	6	:14		:21

119. 1063222	7	:14		:13
120. 1063251	4	:02		:16
121. 1065349	1	:04		:14
122. 1065384	1	:03		:17
123. 1065402	1	:02		:10
124. 1065410	6	:05		:12
125. 1065486	6	:12		:31
126. 1065500	1	:04		:07
127. 1065550	1	:02		:12
128. 1065566	1	:01		:08
129. 1065584	1	:01		:08
130. 1065607	3	:04		:11
131. 1065637	4	:05		:19
132. 1065649	1	:02		:20
133. 1065657	4	:05		:29
134. 1065685	1	:01		:11
135. 1065725	1	:01		:24
136. 1065746	6	:05		:21
137. 1065920	4	:03		:24
138. 1065942	6	:03		:15
139. 1065969	5	:15		:07
140. 1066040	1	:03		:07
141. 1066046	2	:15		:55
142. 1066166	4	:03		:19
143. 1066182	4	:03		:18
144. 1066211	6	:03		:14
145. 1066223	4	:03		:08
146. 1066231	4	:03		:16
147. 1066317	5	:10		:50
148. 1066386	4	:03		:23
149. 1066407	4	:03		:11
150. 1066419	6	:03		:16
151. 1066432	6	:03		:27
152. 1066458	1	:03		:10
153. 1066473	1	:03		:10
154. 1066484	1	:05	:02	:10
155. 1066485	6	:10	:02	:64
156. 1066510	1	:05	:02	:03
157. 1066542	1	:05	:02	:10
158. 1066614	4	:05	:02	:25
159. 1066753	4	:05	:02	:14
160. 1066741	4	:10	:02	:22
161. 1066673	4	:15	:02	:22
162. 1066696	7	:05	:02	:128
163. 1066744	1	:05	:02	:28
164. 1066796	1	:05	:02	:28

165.	1066815	4	:05	:02	:10
166.	1066822	1	:05	:02	:16
167.	1066830	4	:05	:02	:17
168.	1067154	2	:30	:02	:61
169.	1067020	1	:05	:02	:04
170.	1067084	6	:05	:02	:19
171.	1067033	2	:30	:02	:58
172.	1067119	6	:05	:02	:18
173.	1067189	1	:05	:02	:15
174.	1067201	1	:05	:02	:03
175.	1067211	1	:05	:02	:10
176.	1067040	1	:03		:17
177.	1067121	3	:04		:07

Summary of Fire Station One's average call volume and incident completion times:

- It takes on average 1.48 minutes to log each run into the station log.
- Category # 1, routine calls compromise 40 percent of station one's call volume, and take an average of 17.25 minutes to complete the call (from alarm to a completed report.)
- Category # 2, MVA with a Fire Department Transport compromises five (5) percent of the call volume, and take an average of 67.8 minutes to complete.
- Category # 3, MVA without a patient transport compromises 10 percent of the call volume, and take an average of 22.8 minutes to complete.
- Category # 4, Medical calls where the ambulance company transports comprise 28 percent of the call volume and take an average of 35 minutes to complete.
- Category # 5, medical call where the fire department transports comprises four (4) percent of the call volume and take an average of 69.4 minutes to complete.
- Category # 6, Medical call without a transport comprises 10 percent of our call volume and take an average of 26.5 minutes to complete.
- Category # 7, fire or other related calls compromises three (3) percent of the call volume and take an average of 47 minutes to complete.
- All calls combined it takes an average of 28.2 minutes to complete an emergency call.
- Calls requiring patient transportation take on average 70 minutes to complete.

Appendix B

Workload Related
Interview Questions for Station One
House Captains.

The purpose of this interview is to determine how much time in a medic's day is occupied with non-emergency related activities.

1. How long does morning muster last?

2. How long do you give your medics to check out their unit and equipment each morning?

3. Do you assign your medics a personal detail? If so, how long do you give them to accomplish this task?

4. Do your medics participate in the daily station detail? If so, how long do you give them to accomplish this task?

5. Physical training is a daily requirement for all our suppression personnel. How long do you allocate for this activity?

6. Each suppression employee is allowed time for two meals during the shift, how much time is allotted for both meals?

Are there any other administrative assignments you have your medics participate in during the shift?

Appendix C

Rescue personnel administrative daily assignments.

Station One Interview Results.

A Platoon (Captain William Johnson).

- Morning muster lasts 20 minutes.
- Equipment and unit checkout takes 60 to 90 minutes (Avg. 75 minutes).
- Personal detail 30 minutes.
- Station details 60 minutes.
- Physical Training 90 minutes.
- Meals 120 minutes (Lunch and dinner).
- Station EMS re-supply 20 minutes.

Total administrative assigned duties amount to 415 minutes (6.9 hours) per 24-hour shift.

Additionally, rescue personnel take part in a ride-longs, station tours, house testing, quick access preplans, hydrant testing, driver training, school drills, and EMS rookie training (60 minutes per day during new hire probationary periods). Travel time to training center, 15 minutes.

B Platoon (Captain Vince Whitney).

- Morning muster lasts 30 minutes.
- Equipment and unit check out takes 60 minutes.
- Personal details 20 minutes.
- Station details 60 minutes.
- Physical Training 90 minutes.
- Meals 120 minutes (lunch and dinner).

Total administrative assigned duties amount to 380 minutes (6.3 hours) per 24-hour shift.

The following periodic responsibilities take up time during their shift, but are not constant through the year. Ride-alongs, station tours (60 min.), hose testing takes3 – 6 hours. Travel time to the training center takes 15 minutes.

C Platoon (Captain Cal Henrie).

- Morning muster lasts 30 minutes.
- Equipment and unit check 60 to 120 minutes (avg. 90 min.).
- Personal details 15 minutes. Because of the large call volume C platoon Station Captain does not assign their rescue personnel station details beyond taking care of their personal space (bed, and surrounding area).
- Physical training 60 to 120 minutes (avg. of 90 min.).
- Meals up to 180 minutes.

Total administrative assigned duties amount to 405 minutes (6.75 hours) per 24-hour shift.

Other miscellaneous assignments such as hose test, station tours, rookie training, and fire related drills, are assigned to personnel not assigned to the rescues, because of their large call volume.

Between the three platoons the station captains all assign between 6.3 to 6.9 hours of administrative duties to their rescue crews. It would be safe to conclude that seven (7) hours of a rescue crew’s day are spent engaged in administrative duties.

Appendix D

Run Report Computer Entry Times Form.

Run Types:

1. Routine, canceled, no patient contact.
2. MVA, fire department transports.
3. MVA, no transport.
4. Medical, ambulance co. transports.
5. Medical, Fire department transports.
6. Medical, no transport.
7. Fire or other related call.

	Run Number	Run type	Unit #	Computer entry time	Log time
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

Appendix E

Work load work sheet.

Non-emergency administrative assignments:

Morning station meeting, muster -	:30
Check personal safety gear -	:10
Check unit and equipment -	:60
Personal details -	:20
Station details -	:60
Meals (Lunch and dinner) -	:120
Physical Training -	:90
Shift retirement (Wake up call) -	:30

Total non-emergent administrative hours **420 (divided by) :60 = 7 hours.**

Required annual training assignments:

Driver operator CEVO -	4 hrs.
Company Drills -	24 hrs.
Company training -	20 hrs.
Session training -	12 hrs.
Blood bourn pathogen training -	4 hrs.
Haz-Mat 24-hour refresher training -	4 hrs.
SCBA / Hepa training -	4 hrs.
EMT-P continuing education -	30 hrs.
City mandated training -	2 hrs.
New engineer training -	40 hrs.
Radioactive training -	4 hrs.
Pre-fire planning -	12 hrs.
Total annual training hours	**164 (divided by 10) = 16.4**
	16.4 (divided by 7) = 2.3 hours per shift.

Add .5 hours per training shift, (2.3 + .5 = 2.8 hours of training time per shift).

Round out to <u>3 hours per shift.</u>

Administrative waiting time (Reasonable night sleep): <u>7 hours.</u>

<u>Emergency responses profile:</u>

Each transport unit is assigned to transport two patients a shift; each transport takes approximately 70 minutes from call initiation to run report completion.

2 x :70 = 140 minutes (140 min. equals 2.3 hours, included in the table below).

Non-emergent assignments - 7 hrs.
Daily training time - 3 hrs.
Waiting time (Fatigue management) - 7 hrs.

Total assigned time: 17 hours.

There are <u>7 hours</u> remaining for emergency responses.

Response Category.	Call Volume.		Percentage of calls.		Time on task.		Total time (Min.) On task.
1.	11	x	.40	x	17.25	=	75.9
2.	*1*	*x*	*(.05)*	*x*	*67.8*	=	*(67.8)*
3.	11	x	.10	x	22.8	=	25.08
4.	11	x	.28	x	35.0	=	107.8
5.	*1*	*x*	*(.04)*	*x*	*69.4*	=	*(69.4)*
6.	11	x	.10	x	26.5	=	29.15
7.	11	x	47.0	x	47.0	=	15.51
					Total		**390.64**

Log time + Total time on task (19.24 + 390.64) = 409.88 (divided by) 60 = <u>6.83 hrs.</u>

Conclusion: A transport unit assigned to fire station one should have a call volume of 13 emergency calls in a 24-hour shift, (11 random calls and 2 assigned transports).